# THE MINERAL INDUSTRY OF ARGENTINA

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After 4 years of economic decline, Argentina's gross domestic product (GDP) increased by 8.8%. This was the third largest increase in the Latin American and the Caribbean region (after Trinidad and Tobago and Belize). Inflation, as measured by the consumer price index, decreased to 13.9% in 2003 from 25.9% in 2002, and unemployment decreased to 15.6% in May 2003 from 21.5% in May 2002. Unemployment decreased farther to finish the year at 14.5%. The GDP was $127.3 billion[1] ($421.6 billion and about $11,000 per capita in purchasing power parity). The country's external debt, however, was 65.7% of the GDP. Construction increased by 34%; manufacturing, by 16%; agriculture, by 7%; and mining and quarrying (including petroleum and natural gas), by 3.7%. Domestic sales of manufactured products of national origin increased. Of these, significant increases were observed in construction materials, machinery, and transportation equipment (Ministerio de Economía y Producción, 2004, chapter 1, p. 24; chapter 3, p. 2; Instituto Nacional de Estadística y Censos, 2004a§[2]-c§; International Monetary Fund, 2004§; U.S. Central Intelligence Agency, 2004§).

## Government Policies and Programs

Argentina's legal framework for mining covered an abstract of the Mining Code, the Mining Investment Law No. 24.196, Regulating of Mining Investment (Decree No. 2.686/93) and its modification, law No. 25.429 (Decree No. 1.089/03), Mining Reorganization Law No. 24.224, Federal Mining Agreement Law No. 24.228, VAT Funding Law No. 24.402; Regulation of Law No. 24.402 (Decree No. 779/95), Mining Updating Law No. 24.498, Environmental Protection Code for the Mining Industry Law No. 24.585; and Royalty Law No. 25.161.

Some of the important features of the Mining Investment Law No. 24.196 include fiscal stability for 30 years, exemption of tariffs on capital goods, double deduction on exploration expenses, and accelerated amortization. The law limits royalties to 3% at the mouth of mine. The Federal Mining Agreement Law No. 24.228 began the effort to harmonize the provincial mining procedures, established public bidding for large-scale mining, and formalized the commitment to modernize the mining cadastre. Law No. 24.498 eliminated the mining register and reinstated the concession system to the nuclear minerals. One of the important features of law No. 25.429 is that it provides for the reimbursement of the value-added tax for exploration investment. The law also clarifies and modifies a number of articles of law No. 24.196.

The Mining Code, which was approved by the Argentine Congress on May 21, 1997, regulates the rights, obligations, and procedures for the exploration, exploitation, and use of mineral substances.

In 2000, the mining integration treaty (law No. 25.243) between Argentina and Chile was ratified. In 2001, the Government of Argentina approved Decree No. 111. The Decree replaced article 5 of Decree No. 2.686/93 and the regulation of law No. 24.196 for the purpose of modernizing some technical regulations and addressing new issues that have resulted from mining integration with neighboring countries.

## Environmental Issues

The Environmental Protection Code for the Mining Industry Law No. 24.585, which was enacted on November 21, 1995, provides investors with the appropriate legal framework and requires that each Provincial Government create an enforcement authority within their jurisdiction. The law introduces the concept of sustainable development and sponsors a preventive environmental mechanism in the mining sector.

The environmental framework that relates to mining activities was completed with the establishment of Provincial Environmental Management Units. These units are responsible for assisting the Provincial enforcement authority in all aspects that relate to the code, specifically in assessing the environmental impact reports presented and in monitoring mining projects.

## Production

Argentina's mineral production was of regional importance. The country was an important producer of fuel and nonfuel minerals in Latin America. According to U.S. Geological Survey data, it was one of only three producers of primary aluminum in the region, with about 12% of the total. The country was Latin America's third leading producer of mine lead (after Peru and Mexico) and steel (after Brazil and Mexico). It was the fourth leading producer of mine copper (after Chile, Peru, and Mexico) and primary iron [direct-reduced iron (DRI) and pig iron (after Brazil, Mexico, and Venezuela)]. It was the fifth leading producer of silver, although it produced less than 2% of the regional total. Argentina was one of six Latin American producers of mine zinc. Argentina produced 7% of the gold output of the region.

[1]Where necessary, 2003 values have been converted from Argentine pesos to U.S. dollars (US$) at the rate of 2.953 pesos=US$1.00.

[2] References that include a section mark (§) are found in the Internet References Cited section.

Fuel minerals continued to be very important to Argentina's economy. In Latin America and the Caribbean, Argentina was the largest producer of natural gas and the fourth largest producer of crude petroleum (after Mexico, Venezuela, and Brazil) (BP p.l.c., 2004, p. 6, 22).

The value of Argentina's nonfuel mineral production has changed significantly in the last decade. In 2003, the value of mineral production totaled $1.1 billion (Rio Negro ON LINE, 2004§). The importance of metal production has increased with the large-scale mining since 1998. Almost two-thirds of the mineral production was from the large-scale mining companies. The remainder was from the small- and medium-sized mining companies. About 95% of the production was from 12 Provinces. The leading producing Provinces were, in decreasing order of value, Catamarca (copper, gold, and lithium), Buenos Aires (crushed stone and limestone), and Santa Cruz (significant production gold and silver). These three Provinces represented 77% of Argentina's mineral production. About 70% of the production was exported (Agencia de Desarrollo de Inversiones, 2003§).

## Trade

Argentina's exports of goods totaled $29.6 billion. The country's imports (c.i.f.) totaled $13.8 billion. Argentina's main trading partners were, in order of value, countries of the Mercado Común del Cono Sur (MERCOSUR), the European Union, and the North American Free Trade Agreement. Collectively, these three groups accounted for 92% of Argentina's imports and 63% of its exports. Individually, Brazil and the United States were Argentina's main trading partners. Brazil received 16% of Argentina's exports and provided 34% of its delivered imports. The United States received 10% of Argentina's exports and provided 38% of its imports.

Exports of the nonfuel mineral sector have increased significantly since 1991 when the value was only $10 million. In 2003, the value of Argentina's mineral production totaled $1.1 billion; of this, the value of copper concentrate was $467 million. Exports of manufactured goods totaled $1.5 billion; of this, metals (excluding precious metals) and their products accounted for $1.5 billion, precious metals and precious stones amounted to $116 million, and dimension stone and gypsum and ceramics products were valued at $102 million. Exports of fuels and energy totaled $5.4 billion; of this, crude petroleum accounted for $2.2 billion (Ministerio de Economía y Producción, 2004§; Rio Negro ON LINE, 2004§).

## Structure of the Mineral Industry

Argentina's highest Government office with responsibility for the mining sector is the Secretaría de Minería de la Nación. After residing in the Ministerio de Producción since early 2002, the Secretaría was moved to the newly formed Ministerio de Planificación Federal, Inversión Pública y Servicios in 2003 by Decree No. 1142/2003. The Secretaría is responsible for developing the country's mineral policy, promoting the growth of the mineral sector, and creating the conditions to encourage investment in the area. It also has the authority to carry out norms and legislation relevant to the mineral sector and is the authority with responsibility to negotiate national and international agreements on behalf of the Government. As the Government entity to which the Servicio Geológico Argentino (SEGEMAR) reports, the Secretaría also is responsible for promoting geological and mining studies with the purpose of planning the use of the mineral resources of the country. SEGEMAR, which was formed under Decree No. 660/1996, is charged with managing a variety of geologic programs and services based on scientific studies. Its objectives include the coordination and actualization of Argentina's geologic information, contribution to the discovery of resources, and offering technical assistance to the small- and medium-sized mining sectors (Panorama Minero, 2001).

The Dirección Nacional de Minería is responsible for administrating law No. 24.196 and its modifications. The Dirección is also charged with coordinating and developing Argentina's short- and long-term strategic mining plans and acting as an advisor to the Secretariat on technical and legal matters that affect the mining sector. It also is responsible for promoting actions to maintain dynamic small- and medium-sized mining sectors. The Dirección processes and disseminates all mining statistics.

In addition to the Federal Government, the Provincial Governments have offices in charge of mining issues. They are the entities responsible for awarding the mineral concessions in accordance with the Mining Code. They also ensure that the mines adhere to the environmental protection laws and apply Provincial norms.

The mineral industry in the private sector comprised several mining and manufacturing companies, such as Aluminio Argentino S.A.I.C. (ALUAR), Borax Argentina, S.A., Cementos Loma Negra C.I.A.S.A., Cía. Minera Aguilar S.A., Cía. Minera Tea S.A.M.I.C.A.F., Cía. Sulfacid S.A.C.I.F., Minera Alumbrera Ltd., Cerro Vanguardia S.A., and FMC Minera del Altiplano S.A. (table 2).

## Commodity Review

### *Metals*

**Aluminum.—**The sole producer of primary aluminum in Argentina was ALUAR with a smelter and two semifabricated products in Puerto Madryn in the Province of Chubut. The company, which also owned a lamination and extrusion plant in Abasto in the Province of Buenos Aires, had a total workforce of 1,700. In 2003, production of aluminum in Argentina increased by 1% when compared with that of 2002 to 271,932 metric tons (t), which was almost 99% of its production capacity of 275,000 t. Sales (including finished and semifinished products) for the fiscal year ending in June totaled 279,400 t, of which 82% was exported and 18% was for the domestic market (Aluminio Argentino S.A.I.C., 2004§).

**Copper, Gold, and Silver.—**Mine production of copper in 2003 decreased slightly to 199,020 t. Production of gold also decreased (by 8%) to 29,744 kilograms (kg), but output of silver increased by 6% to 133,917 kg. Almost all copper production (198,537 t) was from Minera Alumbrera Bajo de la Alumbrera Mine in the Province of Catamarca. Minera Alumbrera also produced 70% of Argentina's gold with 20,832 kg (reported as 669,764 troy ounces). During the year, the company added a third grinding and crushing circuit at a cost of $27 million. This allowed the company to increase the ore treated by 8% to 43.2 million metric tons (Mt), but as the company expected, copper content of the ore decreased from 0.70% to 0.65% and gold content of the ore decreased from 0.94 gram per ton (g/t) to 0.81 g/t. Lower grades and output were offset by lower production cost and the recovery of copper and gold prices during the year. In 2003, ownership of Minera Alumbrera changed when Xstrata plc of Switzerland acquired M.I.M Holdings. With that transaction, Xstrata became 50% owner of Minera Alumbrera (Xstrata plc, 2004, p. 58, 112). In March, Wheaton River Minerals Ltd. of Canada acquired 25% ownership of Minera Alumbrera from Rio Tinto plc. In June, Wheaton River increased its ownership of Minera Alumbrera by purchasing 12.5% from Rio Algom (a subsidiary of BHP Billiton Plc). The remaining 12.5% was purchased by Northern Orion Resources Inc. (Northern Orion Resources Inc, 2003; Wheaton River Minerals Ltd., 2003a, b).

The second largest gold producer in Argentina was Cerro Vanguardia's open pit mine in the Province of Santa Cruz. The mine was owned by AngloGold Limited (since April 2004 AngloGold Ashanti Limited) and the Province of Santa Cruz. Production from Cerro Vanguardia was 7,030 kg. Together, Bajo de la Alumbrera and Cerro Vanguardia produced about 94% of Argentina's gold and were significant producers of silver.

In addition to the production from Bajo de la Alumbrera and Cerro Vanguardia, several copper, gold, and silver projects were at various stages of exploration. Barrick Gold Corporation completed a feasibility study of the Veladero gold project in the Province of San Juan in the third quarter of 2002. The study called for two open pits, a two-stage crushing circuit, and a heap-leach pad. Construction cost was estimated to be $460 million. Barrick reported that production from the project was expected to begin in 2005. The Government approved the environmental impact statement in October 2003, and the company began construction late in the year. Output from the mine was planned for 16,300 to 17,100 kilograms per year of gold (reported as 525,000 to 550,000 ounces per year) for the first 10 years of operation. At yearend 2003, Barrick reported that Veladero's proven and probable reserves were about 345,000 kg of gold (reported as 11.1 million troy ounces) (Barrick Gold Corporation, 2003, p. 29; 2004, p. 15, 111).

Barrick was also involved in the Pascua-Lama project on the Chile-Argentina border. The company was working on updating the results of the feasibility study and evaluating the similarities with Veladero, which was in the same mining district as Pascua-Lama. At yearend 2003, the project's proven and probable gold reserves were about 525,600 kg (reported as 16.9 million troy ounces). Barrick planned to begin production from Pascua-Lama in 2008 (Barrick Gold Corporation, 2003, p. 30; 2004, p. 15).

In 2003, Northern Orion acquired 7% of the Agua Rica project from BHP Billiton, thus becoming the sole owner of the project. Northern Orion was planning to begin a bankable feasibility study in 2004 and to bring the project into production in about 5 years. The company was considering a 700,000-metric-ton-per-day mine to produce 200,000 t/yr copper with byproduct gold and molybdenum; mine life could be more than 25 years. At a cutoff grade of 0.4% copper, Agua Rica's resources were estimated to be 750 Mt with 0.66% copper, 0.037% molybdenum, 0.23 g/t gold, and 3.2 g/t silver (Northern Orion Resources Inc., 2004§).

Silver Standard Resources Inc. and Pan American Silver Corp. continued the exploration program on the Manantial Espejo silver-gold deposit. Plans called for exploration to continue until 2005 and to be followed by a feasibility study (Silver Standard Resources Inc., 2003).

Meridian Gold Inc. purchased the Esquel (El Desquite) gold deposit in the Province of Chubut when it acquired Brancote Holding Plc. The company intended to develop an open pit mine. The project, however, was put on hold as the result of a referendum in March that indicated that the majority of the local population (81%) was against the development of the mine (Meridian Gold Inc., 2004a§, b§). In April 2003, Provincial Law No. 5000 was passed. The law suspended the Provincial Government's powers to approve new mining concessions. Law No. 5001 of 2003 prohibits open pit mining in Chubut and the use of cyanide for metal recovery.

**Iron and Steel.—**Production of DRI and pig iron increased for the second consecutive year by 13% in 2003 to 4.1 Mt. Similarly, production of steel increased by about 15% to 5.0 Mt. This was the result of Argentina's economic improvement, which translated to increased domestic consumption because of the growth in the construction and industrial sectors. The largest steel producer in Argentina was Siderar S.A.I.C. with a production capacity of 2.5 million metric tons per year (Mt/yr). In 2003, Siderar's production increased by 11% to 2.4 Mt from 2.175 Mt (revised) in 2002. The company earnings of $422 million included those from the Venezuelan producer Siderúrgica del Orinoco C.A. (SIDOR). This was a significant improvement from that of 2002 when Siderar's earnings totaled $41 million. Siderar's domestic shipments increased by 66% to 1.2 Mt. Shipments to foreign markets decreased by 24% from the historical high level of 2002 to 1 Mt. In March, the company reached an agreement to restructure the terms and conditions of its debt. In June, SIDOR's debt was reduced by more than 50% (Siderar S.A.I.C., 2004, p. 2-7).

Argentina's second leading steel producer Acindar Industria Argentina de Aceros S.A. produced almost 1.3 Mt and had shipments of 1.16 Mt. Of the total shipments, about 74% went to the domestic market. Shipments to the domestic market increased by about 40% when compared with those of 2002, and those for exports decreased by about 22%. The company had net earnings of $34.6 million in contrast to a loss of $171.9 million[3] in 2002. At yearend, the company reached an agreement for the restructuring of its debt. The company expected the agreement to be approved by the courts sometime in 2004 (Acindar Industria Argentina de Aceros S.A., 2004).

[3]Where necessary, 2002 values have been converted from Argentine pesos to U.S. dollars (US$) at the rate of 3.11049 pesos=US$1.00.

### *Industrial Minerals*

**Boron.—**Argentina was the leading boron mineral producer in South America. In 2003, production of crude boron minerals increased by 7% to 545,304 t from 509,603 in 2002 (revised). More than 80% of the production was from the Province of Salta where the largest producer Borax Argentina (a subsidiary of Rio Tinto Borax of the United Kingdom) had two of its three mines in Argentina. The remainder of the production was from the Province of Jujuy.

In August 2002, Rio Tinto Borax announced that it was constructing a new boric acid plant in Argentina near its refinery in Campo Quijano. The plant, which began operations in 2003, was producing boric acid from recycling tailings from the Campo Quijano refinery. The 8,000 t of boric from the plant was mainly for South America's agriculture and ceramics businesses. Cost of the plant was $2.6 million (Rio Tinto Borax, 2002, 2003).

**Cement.—**Argentina's cement production in 2003 was 5.2 Mt. This was a 33% increase from that of 2002 but 27% less than the production level achieved in 1999. The growth in production during the year was a reflection of the significant improvement in the construction sector. The largest cement producer in Argentina was Cementos Loma Negra C.I.A.S.A. with a yearly capacity of 6 Mt (table 2).

### *Mineral Fuels*

**Coal.—**Production of coal ceased in 2002 because the producer Yacimientos Carbonífero Río Turbio S.A. (YCRT) in the Province of Santa Cruz did not meet its responsibilities under the terms of its contract with the Government. During 2003, the Government took over the company in an effort to determine its future and put it on care-and-maintenance. A fire in the mine resulted in the death of seven miners. Also during the year, a consortium of a Polish company and European and U.S. investment companies developed an interest in the mine. The company presented a basic infrastructure plan that included the construction of a thermoelectric plant adjacent to the mine and a plan for coal production to feed the plant of about 12 Mt/yr (Auditoría General de la Nación, 2003§; Chubut.org.ar, 2003§; Grupo Clarín, 2004§).

**Natural Gas.—**Production of gross natural gas increased by 11% in 2003. Production of marketed natural gas increased by 13%. Argentina continued to be Latin America's leading producer of natural gas (BP p.l.c., 2004, p. 22). More than 53% of gross production was from the Neuquen Basin in central Argentina followed by the Provinces of Salta with 16% and Tierra del Fuego with 11%. The leading producing company was Repsol-YPF with about 33% of the total. The second leading producing company was Total Austral S.A. with almost 20% of the total (Secretaría de Energía, 2004, p. 8-9).

**Petroleum.—**Argentina was Latin America's fourth leading producer of crude petroleum after Mexico, Venezuela, and Brazil (BP p.l.c., 2004, p. 6). Production in 2003 decreased by about 2% after a 3% decrease in 2002. Neuquen was the leading producing Province with 33% of the total, and Chubut was the second with about 22% (Secretaría de Energía, 2004, p. 1).

By far, the largest producing company was Repsol-YPF with 45% of the total output. The second and third largest producers were Pan American LLC and Petrobrás Energía with about 13% and 10% of the production, respectively. Petrobrás Energía announced plans to invest $1.4 billion within 5 years toward production expansion in Argentina (Secretaría de Energía, 2004, p. 2, 3, 6; Rigzone.com, 2003§).

## Outlook

The nature of Argentina's mining sector changed drastically after the new copper and gold producer Minera Alumbrera came onstream. Other large metal projects have been at different levels of evaluation in the country. Although years of recession decreased the level of investment and plans slowed down, Government policies to encourage investment in the mineral sector remain in place. With metal price increases and the economic recovery of the country, the value of metal production is expected to increase in 2004. Investment in the mining sector is expected to increase as a number of companies have plans to increase their exploration activity and new large mining projects are scheduled for the remainder of the decade. Production of copper, gold, and silver is expected to increase significantly when projects like Agua Rica, El Pachon, Pascua-Lama/Veladero come onstream. New Federal and Provincial Government policies are geared to increase foreign investment in the mining sector.

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Servicio Geológico Argentino (Argentine Geological Survey)
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TABLE 1
ARGENTINA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

| Commodity | | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| METALS | | | | | | |
| Aluminum: | | | | | | |
| Primary | | 206,529 r | 262,394 r | 245,052 r | 268,805 r | 271,932 |
| Secondary[e] | | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 |
| Cadmium: | | | | | | |
| Mine output, Cd content | | 140 | 137 | 160 | 153 | 126 |
| Refined | | -- r | -- | 34 | -- | 25 |
| Copper: | | | | | | |
| Mine output, Cu content | | 210,126 | 145,197 | 191,677 | 204,027 | 199,020 |
| Refined[e] | | 16,000 | 16,000 | 16,000 | 16,000 | 16,000 |
| Gold, mine output, Au content | kilograms | 38,515 | 25,954 | 30,632 r | 32,506 r | 29,744 |
| Iron and steel: | | | | | | |
| Metal: | | | | | | |
| Pig iron | thousand tons | 1,985 | 2,186 r | 1,916 r | 2,180 r | 2,402 |
| Sponge iron (direct reduction) | do. | 989 | 1,420 | 1,276 r | 1,476 r | 1,736 |
| Total | do. | 2,974 | 3,606 r | 3,192 r | 3,656 r | 4,138 |
| Ferroalloys, electric furnace: | | | | | | |
| Ferrosilicomanganese | | -- | 4,900 | 5,150 | 5,000 e | 5,000 e |
| Ferrosilicon | | 2,568 | 2,500 | 2,740 | 2,700 e | 2,700 e |
| Total | | 2,568 | 7,400 | 7,890 | 7,700 e | 7,700 e |
| Steel, crude | thousand tons | 3,799 r | 4,474 r | 4,107 | 4,363 | 5,033 |
| Semimanufactures[2] | do. | 2,973 r | 4,174 | 3,859 r | 3,821 r | 4,680 |
| Lead: | | | | | | |
| Mine output, Pb content | | 15,256 | 14,115 | 12,334 | 12,011 | 12,079 |
| Smelter, primary[e] | | 14,200 | 14,200 | 14,200 | 14,200 | 14,200 |
| Refined: | | | | | | |
| Primary | | 500 | 8,665 | 9,473 | 10,567 | 11,011 |
| Secondary | | 25,195 | 27,000 | 25,960 | 33,000 r | 30,300 |
| Total | | 25,695 | 35,665 | 34,473 | 43,567 r | 41,311 |
| Silver, mine output, Ag content | kilograms | 73,785 | 78,271 | 152,802 | 125,868 | 133,917 |
| Uranium, mine output, $U_3O_8$ content | do. | 4,000 | -- | -- | -- | -- |
| Zinc: | | | | | | |
| Mine output, Zn content | | 34,192 | 34,858 | 39,703 | 37,325 | 29,839 |
| Metal, smelter: | | | | | | |
| Primary | | 40,223 | 36,359 | 39,727 | 38,699 | 39,221 |
| Secondary | | 3,220 e | 2,910 | 3,180 | 3,098 | 3,139 |
| Total | | 43,443 | 39,269 | 42,907 | 41,797 | 42,360 |
| INDUSTRIAL MINERALS | | | | | | |
| Asbestos | | 259 | 254 | 203 r | 155 r | 166 |
| Barite | | 4,365 | 5,472 | 6,955 r | 3,048 r | 3,261 |
| Boron materials, crude | | 245,450 | 512,624 | 633,520 r | 509,630 r | 545,304 |
| Cement, hydraulic | thousand tons | 7,187 | 6,121 r | 5,545 | 3,911 r | 5,217 |
| Clays: | | | | | | |
| Bentonite | | 128,809 | 123,092 | 104,335 | 120,006 r | 128,406 |
| Common | | 2,294,857 | 2,374,294 | 1,515,002 r | 1,506,146 r | 1,611,576 |
| Foundry earth[e] | | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| Fuller's earth (decolorizing clay)[e] | | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Kaolin | | 52,665 | 34,023 | 12,367 r | 9,956 r | 10,653 |
| Diatomite | | 34,056 | 17,663 | 17,090 r | 23,314 r | 24,946 |
| Feldspar | | 62,926 | 59,466 | 48,522 r | 82,642 r | 88,427 |
| Fluorspar | | 12,704 | 11,200 | 9,075 | 5,168 r | 5,530 |
| Gypsum, crude | | 647,001 | 582,337 | 371,527 r | 362,556 r | 387,936 |

See footnotes at end of table.

TABLE 1--Continued
ARGENTINA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

| Commodity | | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| INDUSTRIAL MINERALS--Continued | | | | | | |
| Lithium:[r, 3] | | | | | | |
| Carbonate | | 1,592 | 2,161 | -- | 906 | 2,850 |
| Chloride | | 2,794 | 5,182 | 4,512 | 4,729 | 4,700 |
| Mica | | 3,097 | 4,665 [r] | 2,120 [r] | 1,770 [r] | 1,894 |
| Nitrogen, N content of ammonia | | 87,700 | 189,800 | 596,600 | 616,700 | 723,900 |
| Perlite | | 21,008 | 17,521 | 17,916 [r] | 17,152 [r] | 19,725 |
| Phosphates, Thomas slag[e, 4] | | -- [r] | -- [r] | -- [r] | -- [r] | -- |
| Pumice | | 17,662 | 15,512 | 2,097 [r] | 3,070 [r] | 3,531 |
| Salt | | 1,263,423 | 1,348,514 | 1,269,814 [r] | 1,080,396 [r] | 1,156,023 |
| Sand and gravel: | | | | | | |
| Sand: | | | | | | |
| Construction | | 18,567,501 | 12,450,441 | 10,717,609 [r] | 9,796,605 [r] | 11,266,096 |
| Silica sand (glass sand) | | 262,640 | 495,903 | 891,127 [r] | 280,065 [r] | 299,669 |
| Gravel | | 6,962,668 | 5,967,771 | 4,580,713 [r] | 5,480,427 [r] | 6,302,490 |
| Stone: | | | | | | |
| Basalt | | 1,024,534 | 363,277 | 436,947 [r] | 177,090 [r] | 203,654 |
| Calcareous: | | | | | | |
| Calcite, nonoptical | | 42,509 | 34,024 | 96,269 [r] | 85,299 [r] | 91,270 |
| Calcium carbonate, chalk[e] | | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| Dolomite | | 715,273 | 744,041 | 303,695 [r] | 278,361 [r] | 320,116 |
| Limestone | | 12,626,797 | 10,605,739 | 6,073,902 [r] | 7,060,763 [r] | 8,119,879 |
| Marble, onyx, travertine | | 247,040 | 218,800 | 38,228 [r] | 38,838 [r] | 44,664 |
| Flagstone | | 85,520 | 199,135 | 146,909 [r] | 155,079 [r] | 178,343 |
| Granite: | | | | | | |
| In blocks | | 68,350 | 48,605 | 41,317 [r] | 40,450 [r] | 46,518 |
| Crushed | | 11,554,211 | 10,360,967 | 5,570,812 [r] | 3,785,570 [r] | 4,353,407 |
| Quartz, crushed | | 98,368 | 78,024 | 49,720 [r] | 93,614 [r] | 100,167 |
| Quartzite, crushed | | 400,000 | 776,011 | 386,336 [r] | 247,394 [r] | 284,503 |
| Rhodochrosite | | 23 | 17 | 17 [r] | 22 [r] | 24 |
| Gemstones (agate, amethyst, apolo, tourmaline, etc.) | kilograms | 7,030 | 19,058 | 10,200 [r] | 1,250 [r] | 1,338 |
| Sandstone[e] | | 200 | 200 | 200 | 200 | 200 |
| Serpentine, crushed | | 171,050 | 143,000 | -- [r] | 826 [r] | 950 |
| Shell, marl | | 176,180 | 272,728 | 177,854 [r] | 169,577 [r] | 195,014 |
| Tuff, (tosca) | thousand tons | 2,455 | 4,940 | 4,626 [r] | 2,721 [r] | 3,129 |
| Strontium minerals, celestite | | 2,141 | 4,656 | 2,440 [r] | 3,106 [r] | 3,323 |
| Sulfates, natural: | | | | | | |
| Magnesium (epsomite) | | 6,900 | 6,900 | 6,900 [r] | 6,900 [r] | 7,383 |
| Sodium (mirabilite) | | 6,879 | 10,446 | 11,856 [r] | 10,081 [r] | 10,787 |
| Talc and related materials: | | | | | | |
| Pyrophyllite | | 3,400 | 3,877 | 2,155 [r] | 1,770 [r] | 1,894 |
| Steatite[e] | | 300 | 300 | 300 | 300 | 300 |
| Talc | | 10,542 | 6,730 | 1,665 [r] | 1,643 [r] | 1,759 |
| Total | | 14,242 | 10,907 | 4,120 [r] | 3,713 [r] | 3,953 |
| Vermiculite | | 2,800 | -- | 1,110 [r] | 1,050 [r] | 1,124 |
| Zeolite | | 150 | -- | -- [r] | -- [r] | -- |
| MINERAL FUELS AND RELATED MATERIALS | | | | | | |
| Asphalt and bitumen: | | | | | | |
| Natural (asphaltite) | | 60 | 50 | -- [r] | -- [r] | -- |
| Byproduct of refinery | | 743,125 | 532,922 | 393,681 | 318,290 | 479,389 |
| Coal, bituminous | thousand tons | 354 | 246 | 150 [r] | 56 [r] | -- |
| Coke, all types, including breeze | do. | 1,482 | 1,496 | 1,556 | 1,582 | 1,695 |
| Gas, natural: | | | | | | |
| Gross | million cubic meters | 42,425 [r] | 44,872 [r] | 45,994 [r] | 45,819 [r] | 50,664 |
| Marketed | do. | 34,559 | 37,412 | 37,145 | 36,468 [r] | 41,119 |
| Natural gas liquids | thousand 42-gallon barrels | 16,300 | 18,200 | 18,000 | 18,000 [e] | 18,000 [e] |
| Peat, agricultural (turba) | | 10,542 | 10,159 | 1,067 [r] | 8,208 [r] | 8,782 |

See footnotes at end of table.

TABLE 1--Continued

ARGENTINA: PRODUCTION OF MINERAL COMMODITIES [1]

(Metric tons unless otherwise specified)

| Commodity | | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|---|
| MINERAL FUELS AND RELATED MATERIALS--Continued | | | | | | |
| Petroleum: | | | | | | |
| Crude | thousand 42-gallon barrels | 292,525 r | 281,547 r | 285,381 r | 275,894 r | 270,349 |
| Refinery products: | | | | | | |
| Liquefied petroleum gas | do. | 21,125 | 22,903 | 23,913 | 12,208 | 13,224 |
| Motor gasoline | do. | 70,299 | 64,853 | 59,655 | 50,389 | 55,378 |
| Aviation gasoline | do. | 686 | 107 | 10,000 e | -- | 340 |
| Jet fuel | do. | 12,496 | 12,153 | 10,580 | 10,286 | 8,949 |
| Kerosene | do. | 1,055 | 667 | 570 | 305 | 218 |
| Distillate fuel oil | do. | 80,501 | 77,874 | 77,321 | 71,061 | 74,522 |
| Residual fuel oil | do. | 11,806 | 10,628 | 12,149 | 11,727 | 12,693 |
| Lubricants | do. | 1,311 | 2,141 | 2,246 | 2,275 | 2,945 |
| Other | do. | 19,232 | 19,146 | 22,171 | 27,438 | 28,860 |
| Refinery fuel and losses | do. | 5,432 | 5,039 | 5,050 | 5,370 | 6,027 |
| Total | do. | 213,079 | 205,433 | 212,555 | 180,319 | 190,666 |

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. --Zero.

[1]Table includes data available through September 30, 2004.

[2]Hot-rolled semimanufactures only; excludes castings and cold-rolled semimanufactures produced from imported hot-rolled semimanufactures.

[3]New information was available from Argentine sources that prompted major revisions in how lithium production is reported.

[4]Thomas slag production was estimated from the Thomas crude steel reported in La Siderurgia Argentina annual, which is published by the Instituto Argentino de Siderurgia.

TABLE 2
ARGENTINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2003

(Thousand metric tons unless otherwise specified)

| Commodity | Major operating companies and major equity owners | Location of main facilities | Annual capacity |
|---|---|---|---|
| Aluminum | Aluminio Argentino S.A.I.C. (Government, 52.1%, and private, 47.9%) | Puerto Madryn, Chubut Province | 275 |
| Boron | Borax Argentina S.A. (Rio Tinto Borax, 100%) | El Porvenir Mine and plant, Jujuy Province; Sije and Tincalayu Mines and plants, Campo Quijano refinery, Salta Province | 615.[1] |
| Do. | Procesadora de Boratos S.A. (Ferro Corp., U.S.A., and JEM Resources, Canada) | Loma Blanca, Jujuy Province, and plant at Papalá | 36. |
| Do. | Ulex S.A. (private, 100%) | Pastos Grandes, Salta Province | 2.[1] |
| Do. | Norquímica S.A. | Salta Province | 5 boric acid. |
| Cement | Cementos Loma Negra C.I.A.S.A. (private, 100%) | Buenos Aires, Córdoba, Corrientes, Salta, Salta Juan, Mendoza, and Jujuy Provinces | 6,000. |
| Do. | Cementos Avellaneda, S.A. (Corporación Uniland S.A. and C. Molins International S.A.) | La Caldera plant, San Luis Province and Olavarría plant in Buenos Aires Province | 2,800, 220 lime. |
| Do. | Juan Minetti S.A. (Holcin Ltd., 100%) | | 1,700. |
| Coal | Yacimientos Carbonífero Río Turbio S.A. (private, 100%) | Río Turbio, Santa Cruz Province | 210. |
| Copper and gold[2] | Minera Alumbrera Ltd. (Xstrata plc, 50%; Wheaton River Minerals Ltd., 37.5%; Northern Orion Resources Inc., 12.5%) | Bajo de La Alumbrera Mine, Belén Department, Catamarca Province | 200 Cu, 22,000 Au. |
| Gold and silver kilograms | Cerro Vanguardia S.A. (AngloGold Limited, 92.5%, and Government of Santa Cruz Province, 7.5%) | Cerro Vanguardia Mine, Santa Cruz Province | 100,000 Ag, 10,000 Au. |
| Do. | Yacimientos Mineros de Agua de Dionisio (Government, 100%) | Farallón Negro, Hualfín, and Belén, Catamarca Province | 4,600 Au, 50,000 Ag. |
| Do. | Small mines (private, 100%) | Various in Jujuy Province | 5,000 Ag. |
| Lead, silver, and zinc[3] | Cía. Minera Aguilar S.A. (owned by Cía. Minera del Sur) (private, 100%) | Estación Tres Cruces, El Aguilar, Jujuy Province | 49,800 Ag, 24 Pb. |
| Lead and silver refinery[3] | do. | Refinería Aguilar, Palpalá Industrial Park, Jujuy Province | 15 Pb, 18,000 Ag. |
| Natural gas million cubic meters | Transportadora de Gas del Sur, S.A. and Transportadora de Gas del Norte (private, 100%) | Neuquén, Santa Cruz, Tierra del Fuego, Salta, and Río Negro Provinces | 46,000. |
| Petroleum million barrels | Repsol-YPF | Chubut, Santa Cruz, Neuquén, Río Negro, Mendoza, Salta, Tierra del Fuego, Jujuy, La Pampa, and Formosa Provinces | 366. |
| Steel | Siderar S.A.I.C. (Techint Group, 53%; Inversora Siderúrgica Argentina, S.A., 11%; Usiminas, 5%; Compahnia Vale do Rio Doce, 5%) | 7 kilometers from San Nicolás de los Arroyos, Buenos Aires Province | 2,500 steel, 1,100 pig iron. |
| Do. | Acindar Industria Argentina de Aceros S.A. (private, 100%) | Plant Nos.1 and 3, Buenos Aires Province; Plant No. 2, near Río Paraná, Santa Fe Province | 1,500 steel, 1,000 DRI.[4] |
| Do. | Siderca S.A.I.C. (Techint Group) | Buenos Aires Province | 900, 670 DRI.[4] |
| Uranium (ore) | Empresa Nuclear Mendoza (subsidiary Nucleoélectrica Argentina S.A.) | Sierra Pintada, San Rafael, Mendoza Province | 160. |
| Zinc refinery | Cía. Sulfacid S.A.C.I. and Cía Minera Aguilar S.A. | Near Rosario on the Paraná River, Santa Fe Province | 40. |

[1]Crude minerals.
[2]Gold data reported in kilograms.
[3]Silver data reported in kilograms.
[4]Direct-reduced iron.